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## Natal pterylosis of some neotropical thrushes (Muscicapidae: Turdinae)

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*Received 23 July 1993*

For many neotropical passerines, there are large gaps in our knowledge of natal pterylosis. In addition, descriptions of natal downs (neossoptiles) are often based on examination of small numbers of specimens (Collins 1990). One way to increase sample sizes is to make quantitative counts of neossoptiles on living nestlings in the field on an opportunistic basis, or as part of other studies when collection of specimens would be disruptive. As part of an ongoing study of natal pterylosis in neotropical passerines (Collins 1973, Collins & Bender 1977, Collins & McDaniel 1989) we present here data on six species of turdine thrushes, with a comparison of counts made from preserved specimens in the lab and living nestlings observed in the field.

Counts of natal downs were made from 13 specimens of four *Turdus* thrushes. In addition, field counts were made from two of these four species of *Turdus* and two other turdine species. All individuals were in early stage A of Wetherbee (1957) with no sign of pin feathers erupting.

Two specimens of Bare-eyed Thrush *Turdus nudigenis* from one nest were collected on 19 July 1964, and six specimens of Cocoa Thrush *T. fumigatus* from two nests were collected on 19 May and 18 July 1964, all in the Arima Valley, Trinidad. Two specimens from one nest of White-throated Thrush *T. albicollis* were collected on 2 July 1972, and three specimens of Pale-breasted Thrush *T. leucomelas* from one nest were collected near Rancho Grande, Estado Aragua, Venezuela. Specimens were examined under a binocular dissecting microscope and numbers and distribution of downs recorded (Table 1). Field counts for all species were made between April and June 1972 near Rancho Grande on newly hatched chicks as part of a study of growth rates (see Ricklefs 1976: 206-7). These field counts were made with a hand lens on 16 chicks of Pale-breasted Thrush, two of White-throated Thrush, two of Yellow-legged Thrush *Platycichla flavipes*, and one of Andean solitaire *Myadestes ralloides* (Table 3).

Total neossoptile counts from specimens ranged from 32 to 112 for individual *Turdus* nestlings (Table 1), with an average of 61 for

TABLE 1  
Neosoptile counts from specimens of four *Turdus* thrushes

Tract (region)	<i>Turdus fumigatus</i>				nest 2	<i>Turdus albicollis</i>	<i>Turdus leucomelas</i>		<i>Turdus nudigenis</i>		
	nest 1										
Capital (Coronal) (Occipital)	4/4 2/2	5/3 2/2	4/5 2/2	1/2 2/2	4/5 2/2	1/1 0/1	8/11 4/3	7/6 2/2	5/5 2/2	4/4 2/2	6/6 3/2
Spinal (Mid-dorsal) (Interscapular)	9/8 0	9/8 0	5/6 0	0/2 0	10/10 0	9/11 0	8/9 1	9/9 0	9/9 0	10/10 0	3/4 0
(Pelvic)	3	3	2	3	3	2	5	4	4	3	4
Scapular (Primary)	4/3 10/9	5/5 9/9	5/5 9/9	4/4 0/0	2/2 0/0	0/3 0/0	8/7 9/9	7/7 8/7	7/7 9/9	2/4 9/9	5/6 9/9
(Secondary)	8/8	3/3	8/8	0/0	0/0	0/0	9/9	1/1	8/9	3/6	8/6
Caudal	6/6	6/6	5/4	6/6	6/6	6/6	6/6	6/6	6/6	6/6	6/6
Total	86	78	79	32	52	40	112	82	98	68	83

Note. For tracts with paired rows, numbers are those on right/left sides. For the two unpaired rows, single figures are given.

TABLE 2  
Total neossoptile counts in 15 thrushes

Species	Total number of neossoptiles	n	Source
<b>Tropical zone species</b>			
<i>Turdus albicollis</i>	97	2	This study
<i>T. fumigatus</i>	61	6	This study
<i>T. leucomelas</i>	98	3	This study
<i>T. nudigenis</i>	76	2	This study
<b>Temperate zone species</b>			
<i>Turdus migratorius</i>	134	9	Wetherbee 1957
<i>T. libonyanus</i>	196	1	Markus 1970
<i>T. olivaceus</i>	292	2	Markus 1970
<i>Myadestes townsendi</i>	110	1	Wetherbee 1957
<i>Hylocichla mustelina</i>	64	1	Wetherbee 1957
<i>Catharus guttatus</i>	77	4	Wetherbee 1957
<i>C. ustulatus</i>	64	3	Wetherbee 1957
<i>C. minima</i>	76	2	Wetherbee 1957
<i>Monticola angolensis</i>	76	1	Markus 1970

Note. The average is given where more than one specimen was examined.

TABLE 3  
Neossoptile counts from thrush chicks examined in the field

Tract or region	<i>Turdus albicollis</i>		<i>Platycichla flavipes</i>		<i>Myadestes ralloides</i>	<i>Turdus leucomelas</i> (n=16)
Coronal	5/5	5/5	8/10	7/7	12/12	3(0-11)/3(0-10)
Occipital	3/3	2/2	3/3	2/2	4/5	2(1-3)/2(1-3)
Mid-dorsal	10/10	9/9	10/12	9/9	9/9	8(4-11)/8(4-11)
Pelvic	2	3	0	2	0	3(0-6)
Scapular	5/7	6/6	6/6	5/5	8/8	3(0-8)/3(0-8)
Total	50	47	58	48	67	34(10-68)

Note. Conventions for right/left sides as in Table 1. For *T. leucomelas*, the mean (to nearest whole number) and range are given.

*T. fumigatus*, 97 for *T. albicollis*, 98 for *T. leucomelas*, and 76 for *T. nudigenis*. The average total for *T. fumigatus* was depressed by inclusion of 3 specimens from nest no. 2 which lacked any alar tract neossoptiles. The nestlings from nest no. 1 had an average total of 81 neossoptiles, which is more similar to the total counts for the other three *Turdus* species. These counts are lower than those for three temperate latitude *Turdus* species, but similar to the totals reported for other temperate zone thrushes (Table 2). Lower total neossoptile counts in tropical congeners have previously been noted for some icterids (Collins & Minsky 1982).

Our counts showed reduced alar tract coverts and no remex coverts in any of the *Turdus* species, in contrast to *T. libonyanus* and *T. olivaceus* (Markus 1970) and *T. migratorius* (Wetherbee 1957). One specimen of *T. albicollis* had a single interscapular down, a region only recently described by Collins & Keane (1991) in *Sayornis*. Specimen counts of *T. fumigatus* chicks from the same nest showed greater similarity in the number of neossophtiles per tract, and total neossophtiles, than did chicks from different nests (Table 1). The greatest differences were in the presence or absence of alar tract neossophtiles.

Field counts of neossophtiles on *T. albicollis* and *T. leucomelas* resulted in distinctly lower total counts (Table 3); the average totals, 49 and 34 respectively, were approximately half the totals determined from specimens. These counts were, however, restricted to the longer, more obvious neossophtiles of the head and body. The field counts did not include any of the minute neossophtiles (<2 mm) on the primaries, secondaries and rectrices, if present, and this clearly contributed to the lower totals. Similarly, the total neossophtile counts for *Platycichla flavipes* and *Myadestes ralloides* should be considered low, by perhaps one half, and comparisons with other species must be limited to only those tracts in which downs were detected.

It is possible that more accurate counts could be made in the field if the observer were previously aware of the specific tracts which would be expected to have neossophtiles present, and their lengths. This, in turn, would have to be based on prior examination of specimens of the same or related species. Even so, an accurate field census of the shortest neossophtiles, often less than 1 mm, would be problematical. Accordingly, the most reliable data will continue to come from the examination of specimens, which can also be re-examined when new tracts are discovered.

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